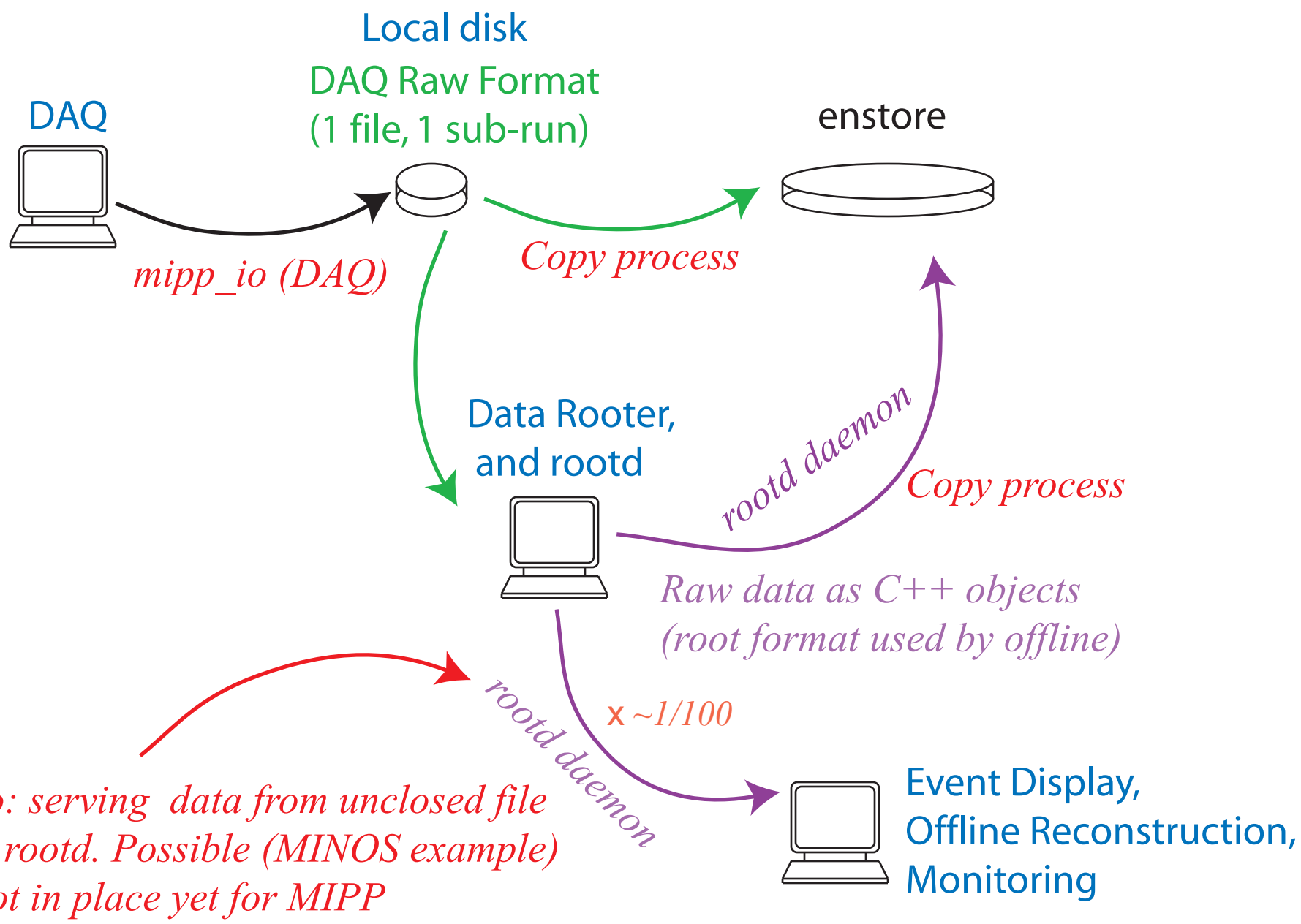
MIPP Offline Software

Mark Messier / Andre Lebedev

- DAQ/Offline interface
- Reconstruction flow
- Package status
- TPC code

Online / Offline Interface



Reconstruction Flow

TPC Track finding / fitting

TPC+Drift chamber tracking fitting
(TPC + DC tracks + DC only)

Vertex finding

Particle ID

For each track:
test π/K/p hypothesis in:
TPC (dE/dx)
CKOV (threshold)
TOF (um, time of flight)
RICH (ring radius)

Calorimeter - anything beyond total E?

EventSummary
(list of verticies and tracks Pπ, PK, Pp)

Package Summaries

Utilities	Database interface Configuration NumericalMethods Geant3Interface (C/FORTRAN utils)
Data Access	EventDataModel (get/put data into event) IoModule (get/put data from disk)
Data Objects	RawData RecoBase (Reconstructed tracks, verticies) MCClasses (Hits, MC tracks, verticies)
Geometry	(Detector locations, connection map)
MonteCarlo	e907mc (GEANT3 simulation) E907MCInterface (FORTRAN/C++) TPCDigitizer RICHDigitizer XYZDigitizer
Reconstruction Algorithms	TPCReco RICHReco XYZReco
Data Analysis	MIPPEventSummary (ntuple-like summary) EventDisplay, Online monitor

Low level

Red = Does not exist
Yellow = in progress
Green = in good shape

Dependency Order

High Level

TPC Digitization

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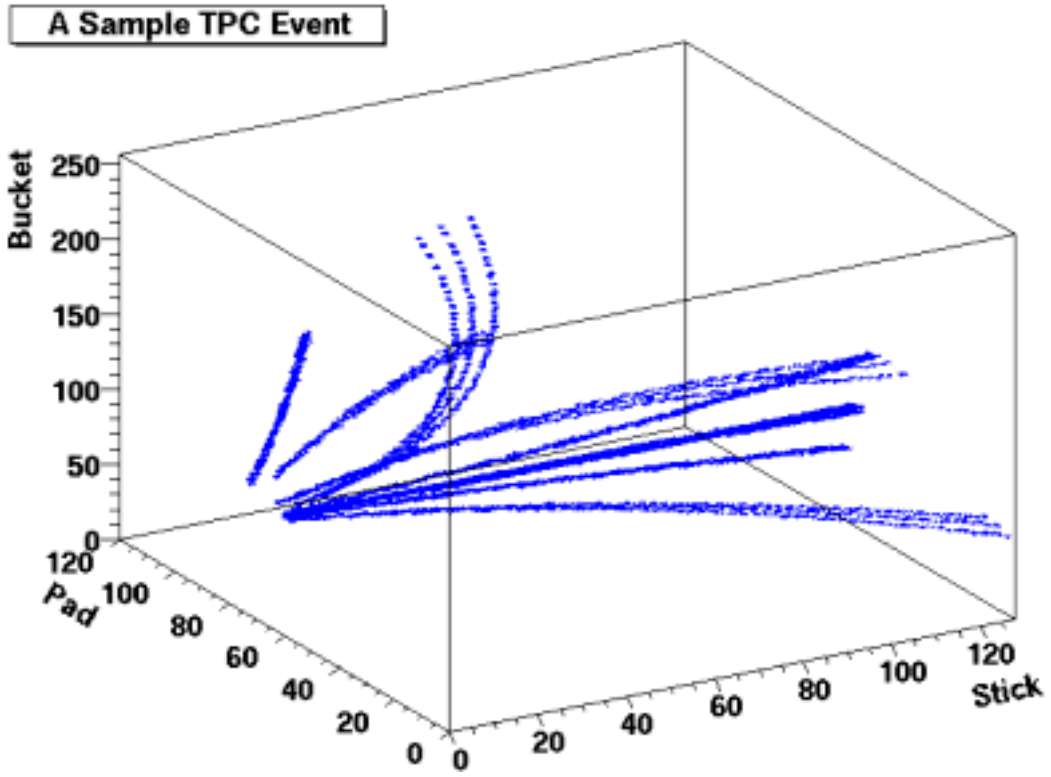
Overview of the algorithm

- Decision was made not to use the e910 code
- New code
  - Get the hits with non-zero deposited energy
  - Create digits from each hit
    - Smear energy (Gaussian or Landau)
    - Jitter hit position (Gaussian)
    - Spread charge over pads (space) and buckets (time)
      - Gaussian or Poisson
  - Loop over all digits and sum up the overlapping ones

It seems to be working



NOTE: There are 3 tracks – with set momentum and ±10% for momentum resolution studies

Next Step: Reconstruction

- Will basically re-write e910 code
  - Mark Messier began porting the code
- This is work in progress…